

## **ATTACHMENT A**

### **SOLID WASTE MANAGEMENT UNIT (SWMU), AREA OF CONCERN (AOC) AND GROUNDWATER OPERABLE UNIT (GWOU) DESCRIPTIONS**

#### **SUNFLOWER ARMY AMMUNITION PLANT DESOTO, KANSAS RCRA ID# KS3213820878**

##### **SWMU 1 - Classification Yard**

The Classification Yard is comprised of approximately 64 acres along the railroad switchyard in the northeastern portion of SFAAP. Incoming raw materials were sorted in this area for diversion to the appropriate receiving facility within SFAAP. The area operated from 1942-1991. Rail operations in the area stopped in 2001. This area produced no hazardous wastes; however, as a result of handling incoming raw materials which may be classified as hazardous, the area had the potential for contamination. Although no spills were reported, the Classification Yard was identified as an area of potential contamination in the 1980 Installation Assessment because of the materials handled and the length of time the area has been in use.

##### **SWMU 2 - River Water Treatment Plant Lagoons**

The River Water Treatment Plant (RWTP) (approximately 19 acres), located in the northern portion of SFAAP near the Kansas River, was constructed and started operations in 1943. Water from the Kansas River was treated by lime addition, sedimentation, carbon filtration and chlorination. Sludge from the RWTP was partially used to construct two unlined lagoons south of the plant (upper lagoon approximately 1,269,000 ft<sup>3</sup>, lower lagoon approximately 1,952,000 ft<sup>3</sup>). Wastes from the RWTP were collected in the lagoons. Water treatment operations at the RWTP ceased in 1971, thus eliminating the effluent of sludge from the RWTP into the lagoons. In the late 1970s, because of the start up of NQ production, the lagoons received about 200,000 gallons per day of discharge from the NQ Area. This included wastewater from tank T784 (SWMU 44) which stored non-contact cooling water, steam condensate, cooling tower blowdown, and ammonia stripper discharge from the NQ production process. The RWTP subsequently was leased to a private firm for commercial aquaculture purposes (terminated in Sep 2001). Both lagoons support a variety of aquatic life. Beaver, muskrat, turtles, sunfish and bass, along with aquatic vascular plants and summer algal blooms, are commonly observed.

##### **SWMU 3 - Main Sewage Treatment Plant Drying Beds**

The main Sewage Treatment Plant (STP) is located on approximately 10 acres in the northeastern portion of SFAAP. Operations began in 1943. The STP stopped receiving human waste in 2002. The plant treated sanitary wastewater from the installation. Following treatment, water from the plant was discharged into Kill Creek. During the 1950s and 1960s, solids (sludge) from the STP were placed in drying beds east of the Imhoff tank. The digester was last emptied in 1974. Wastewater from various production facilities and laboratories (including a

photographic laboratory) processed at the plant may have contained hazardous constituents. According to a 1974 report, no chlorination was provided. This site consists of the sewage treatment plant and the drying beds east of the Imhoff Tank.

#### SWMU 4 - Pond A And Sludge Disposal Area

Pond A (approximately 2.5 acres) is an unlined pond located in the north central portion of SFAAP encompassing approximately 86,200 ft<sup>2</sup>. Pond A was constructed in the 1940s and received wastewater from NC production during the periods 1943-1960 and 1965-1971, and water discharged from the NQ Pilot Plant from 1980-1984. Pond A was used for the sedimentation of solids and equalization of wastewater from the NC area prior to lime treatment and subsequent discharge to Pond B (SWMU 6). In addition, Pond A received wastes from many other areas of SFAAP, including the NQ Pilot Plant. The pond now functions as part of the natural drainage system receiving storm sewer outfall from various parts of SFAAP, including drainage from the Industrial Wastewater Treatment Facility Area. An unknown quantity of sludge dredged from Pond A was landfilled at the Sludge Disposal Area, located north of, and adjacent to, the pond. All underground piping that is associated with the neutralization basin will be handled under SWMU 5.

#### SWMU 5 - Acid Sewage Disposal Plant

The Acid Sewage Disposal Plant is located on approximately 1 acre on the southeast edge of Pond A. It was constructed in 1943 to treat the acidic wastewater flowing into Pond A from the NC area and had two periods of operation: 1943-1960 and 1965-1971. The pH of Pond A effluent was adjusted in the neutralization unit before draining into Pond B (SWMU 6). Neutralized wastes and unsettled flocculent were discharged to an open drainage ditch leading to Pond B. During a visual inspection in 1990, a white sludge identified as “pebble lime” was piled up along the southeast edge of the Acid Sewage Disposal plant. The underground piping and the initial portion of the connecting ditch to Pond B will be remediated under this SWMU.

#### SWMU 6 - Pond B And Sludge Disposal Area

SWMU 6 (approximately 38 acres) is located in the east-central portion of SFAAP, downstream of Pond A. Pond B is an unlined impoundment situated upon limestone bedrock with a surface area of approximately 9 acres and a capacity of approximately 2.2 million ft<sup>3</sup> (16.5 million gal). The pond was constructed in the 1940s for sedimentation of solids from the neutralized wastewater discharged from the Acid Sewage Disposal Plant (SWMU 5). Unknown quantities of sludge were occasionally dredged from Pond B and landfilled west of the pond. Pond B discharges into Kill Creek. The pond supports a variety of aquatic life. Large fish were observed in the pond during a site visit in 2002.

#### SWMU 7 - North Acid Area: Chromate Area

The North Acid Area is located in the north-central portion of SFAAP. The North Acid Area manufactured ammonium nitrate liquor from 1947 to 1948 and was dismantled in 1958. The North Acid Area contains 3 SWMUs: the Chromate Area (SWMU 7), the Chromate Concentration Pond (SWMU 8) and the Wastewater Treatment Lagoon (SWMU 9). The Chromate Area consists of approximately 0.5 acre within the North Acid Area. The Chromate Area is the location of the former cooling water treatment unit, including a cooling tower in which chromium-contaminated wastewater was reportedly generated through the use of corrosion inhibitors on the tower. Chromate liquid may have been disposed of in pipes subsequently left buried in the area and the potential is present for heavy metal contamination. When the site was dismantled in 1958, the two wastewater collection basins were left in place. In 1982 and 1983, chromium-contaminated water was removed from the basins. Water continues to accumulate in the basins. A geophysical survey was conducted and several subsurface anomalies were identified, potentially indicating buried process pipelines.

#### SWMU 8 - North Acid Area: Chromate Concentration Pond

The North Acid Area is located in the north-central portion of SFAAP. The North Acid Area manufactured ammonium nitrate liquor from 1947 to 1948 and was dismantled in 1958. The North Acid Area contains 3 SWMUs: the Chromate Area (SWMU 7), the Chromate Concentration Pond (SWMU 8) and the Wastewater Treatment Lagoon (SWMU 9). The Chromate Concentration Pond is known to have been located within the North Acid Area, but because the pond has been drained, its specific location remains uncertain. Reportedly, chromate was used as a corrosion inhibitor on the cooling towers at the Nitrogen Fixation Plant. Chromate salts from the neutralization process used to treat chromium sludge were reportedly stored in drums located in the magazine area. These salts proved non-hazardous and SFAAP received state approval to dispose of the salts in an on-site landfill.

#### SWMU 9 - North Acid Area: Wastewater Treatment Lagoon

The North Acid Area is located in the north-central portion of SFAAP. The North Acid Area manufactured ammonium nitrate liquor from 1947 to 1948 and was dismantled in 1958. The North Acid Area contains 3 SWMUs: the Chromate Area (SWMU 7), the Chromate Concentration Pond (SWMU 8) and the Wastewater Treatment Lagoon (SWMU 9). Wastewater treatment practices for the North Acid Area were not documented. It is believed the processes were similar to the traditional wastewater treatment operations practiced in the South Acid Area. This treatment involved lime addition to the wastewater, followed by discharge to a holding pond or lagoon. The South Acid Area produced calcium sulfate sludges. Similar sludges are believed to have been produced in the North Acid Area. In addition, there is a possibility that chromate-contaminated water may have been released as waste to this lagoon.

#### SWMU 10 - F-Line Area Ditches

The F-Line Area is located in the east-central portion of SFAAP. This site consisted of sumps, troughs, pipes and other conveyances and ditches used for the management of wastewater from operations in the F-Line Area. F-Line included a blender house where explosive propellant was received and blended with lead salicylate; rolled into sheets; slit and wound into carpet rolls; and extruded by large hydraulic presses into solid propellant grains. Any propellant that was on the floor was washed into the drain with the wastewater. Most of the effluents were then discharged, via unlined ditches, to settling ponds and eventually to Spoon and Kill Creeks; however, one group of the ditches discharged directly to a field adjacent to Spoon Creek. The F-Line ditches were located on the east side of the F-Line press houses. Occasionally, propellant solids settled in these ditches before reaching the ponds. The ditches were used periodically from the early 1950s to 1971. Several ditches served as discharge points for runoff from storm drains along the streets in the area.

#### SWMU 11 - F- Line Area Settling Ponds

The F-Line Area (approximately 5 acres total) is located in the east central portion of SFAAP. Wastewater from the F-Line production facilities drained into ditches, which, for the most part, led to the six F-Line Area Settling Ponds (1A, 1B, 2A, 2B, 3A, and 3B) and two Blender Ponds (4A and 4B). The six Settling Ponds were unlined earthen ponds equipped with stand pipes to permit settling of solids and decantation of water. The northernmost Settling Ponds (3A and 3B) were operational from 1943 to 1971. The remaining ponds were operational from 1943 to 1969. These ponds were used to settle propellant solids from wastewater generated during production of propellants. The ponds were also part of the natural drainage system, ultimately discharging into Spoon and Kill Creeks. During past operations, SFAAP occasionally removed the propellant solids which had accumulated in the ponds and burned them at the burning grounds. The pond sediments were contaminated with uncolloided propellant with lead salts, phthalates and NC from the manufacturing process.

#### SWMU 12 - Pyott's Pond And Sludge Disposal Area

Pyott's Pond and Sludge Disposal Area (approximately 12 acres) is located in the east-central portion of SFAAP. Pyott's Pond is an unlined, earthen impoundment with a surface area of approximately 1.7 acres and a capacity of approximately 697,000 ft<sup>3</sup> /5.2 million gal. The pond was constructed in 1968 to aide in pollution control. In the past it has received drainage from the South Acid Area, the F-Line Paste Area, the NC Area, the Solvent Area and the NG Area, as well as non-contact cooling water, boiler blowdown and some process water from the South Acid Area. Neutralization of water entering the pond resulted in an accumulation of calcium sulfate sludge, which was periodically dredged and landfilled adjacent to the pond to the north and south. The pond was used primarily for flow control and emergency containment for acid manufacturing. Effluent from the pond drains northeast to Kill Creek, and was monitored by NPDES Outfall 004. The pond supports an active aquatic ecosystem.

#### SWMU 13 - South Acid Area Liquid Waste Treatment Plant Evaporative Lagoons

The South Acid Area Liquid Waste Treatment Plant Evaporative Lagoons (approximately 32 acres) are located in the east-central portion of SFAAP. The Liquid Waste Treatment Plant (LWTP) consists of 5 aboveground tanks: 3 for treating wastewater, 1 for slurring lime, and 1 for feeding wastewater to be treated. In addition, there were 4 unlined, earthen cells used as Evaporative Lagoons associated with the LWTP. Use of the LWTP and lagoons began in 1979. Volumes of waste treated at the LWTP varied with the needs of production operations. The plant treated up to 1.5 million gallons of corrosive wastewater each month. In the summer of 1986, the lagoons were reportedly nearing their effective capacity, and the wastewater from the lagoons was being applied to land within the plant boundaries. Land application of wastewater had been performed in many areas of SFAAP, including the open areas in the western and southern portions of the NQ production area.

#### SWMU 14 - Rocket Static Test Area

The Rocket Static Test Area is located in the east-central portion of SFAAP. It encompasses approximately 7 acres in the northeastern portion of the Proving Ground area. The site includes 4 firing platforms. Two outdoor firing platforms are located immediately north of each of the two Proving Ground buildings. The Proving Ground was used to conduct proof and surveillance tests of manufactured powder and propellants common to cannon and rocket artillery. Tests were conducted between 1965 and 1971.

#### SWMU 15 - Waste Storage Magazines

The Waste Storage Magazines (approximately 57 acres) are located in the southeast portion of SFAAP, and are also known as the J-Magazine Area Buildings. The buildings included in this SWMU are J-117, J-118, J-119, J-120, J-121, J-122, J-124, J-127, and J-128. All magazines used natural lighting to preclude accidental detonation of explosives, are secured with locking doors, and have concrete floors with secondary containment. Materials designated to be stored in each magazine included production waste from propellant manufacturing, spent solvents, and other explosive and hazardous waste. During a site inspection in 1990, rust colored stains were noted on the concrete loading pad at J-127.

#### SWMU 16 - Temporary Waste Storage Magazines

Most of the Temporary Waste Storage Magazines (approximately 79 acres) are located in the southwest-central portion of SFAAP. The buildings included in this SWMU are B-14, B-16, B-20, B-21 and B-22. Also included in this SWMU is Building 181-2 which is located in the central portion of SFAAP. Building 181-2 is an inactive 12 x 15 ft metal structure that was used to store spent degreasing solvents. The building has a concrete floor and is surrounded by an earthen dike. The solvents which were stored in 181-2 were transferred in 1984 to Building J-125, where temporary spill containment was provided. When the upgrading of J-124 was complete, the solvents were then transferred from J-125 to J-124. Over time, 181-2 contained approximately 550 gallons of spent degreasing solvents. During a site visit in 1990, no signs of

past releases were evident. It was noted, however, that the earthen dike for spill containment for building 181-2 was “inadequate.”

#### SWMU 17 - G-Line Area Ditches

The G-Line Area Ditches (approximately 284 acres) are located in the south central portion of SFAAP. It was a solvent propellant area. G-Line operated from 1943-1948, and 1953-1960. It was reported that during the 1940s, the G-line NC wringers overflowed, and NC fines had been observed along drainage ditches from the area leading to Kill Creek. It is likely that G-Line Area ditches received the same types of materials and followed the same historical wastewater treatment practices as the F-Line Area. The G-Line area is situated close to the basin divide between flow westward to Captain Creek and flow eastward to Spoon and Kill Creeks. Consequently, it is possible for contamination to migrate in either direction depending on the location of the source of contamination in the G-Line area. In addition, it has been reported that NC spills occurred in the area and that NC wastes were observed in the ditches in the area. Propellant solids containing lead salts may have settled in these ditches.

#### SWMU 18 - Old/New Sanitary Landfills

The entire Landfill Area encompasses approximately 50 acres located about 1 mile west of the NG Area near the central-western border of SFAAP. However, approximately only 32 acres make up the Old/New Sanitary Landfills. SFAAP employed a trench-type operation at the Old/New Sanitary Landfill. Included in SWMU 18 are the Old/New Sanitary landfill (approximately 31 acres) and the Asbestos Landfill (approximately 1 acre). The Old/New Sanitary Landfill began operation in 1943. Prior to the designation of the New Sanitary Landfill in 1967, refuse of all types was buried at a site just south of the new landfill. No records from the Old/New Sanitary Landfill were available. SFAAP no longer uses the Old/New Sanitary Landfill; currently, waste is disposed off-site. It is believed that hazardous wastes was not placed in either landfill; however, there is one area reported to have received containers of a lead compound east of the landfill and 2 areas with known asbestos waste near the Old/New Sanitary Landfill.

#### SWMU 19 - Ash Landfill

There are two, unlined ash landfills at SFAAP. The Ash Landfill (approximately 19 acres) is located north of the Old/New Sanitary Landfill in the central-western portion of SFAAP. The area of Ash Landfill adjacent to Old/New Sanitary Landfill will be addressed under SWMU 18. The other ash landfill area included with the Ash Landfill (SWMU 19) landfill is located southeast of Power House #1 (approximately 1 acre). It has been reported that these landfills were used prior to 1966. The ash landfills contain unknown quantities of fly ash from the ash-sludge system and coal fines from the coal pile. Fly ash can contain heavy metals. The area of SWMU 19 adjacent to SWMU 18 will be addressed under SWMU 18.

#### SWMU 20 - Ash Lagoon And Sludge Disposal Area

The Ash Lagoons and Sludge Disposal Area are located on 15 acres in the north-central portion of SFAAP. There are four Ash Lagoons, all are 15 feet deep. Lagoon 165-1 has an area of 103,600 ft<sup>2</sup>, Lagoon 165-2 has an area of 118,900 ft<sup>2</sup>, Lagoon 165-3 has an area of 95,000 ft<sup>2</sup>, Lagoon 165-4 has an area of 10,000 ft<sup>2</sup>. These lagoons began operation in 1979 to collect fly ash and bottom ash from the boiler house (Power House #1) via an ash-sludge system. The ash wastes (which may contain heavy metals) were allowed to settle out in the lagoons and the slightly alkaline wastewater was filtered and recycled back to the boiler house. Lagoons 165-1, 165-2, and 165-3 were periodically dredged and the sludge was landfilled in the Ash Landfill (SWMU 19). The lagoons are located just south of Pond A; however, discharge most likely flowed in the direction of the topographic slope to Pond B, located 2,000 feet east of the lagoons. Reports from site visits in 1987 and 1990 both say that the embankments of the lagoons appeared to be in good condition. The lagoons are reportedly unlined; however, logs from a 1992 site visit describe one lagoon as having a liner. Unlined lagoons present a pathway for constituents to migrate into the groundwater.

#### SWMU 21 - Contaminated Materials Burning Ground

The Contaminated Materials Burning Ground consists of approximately 10 acres located in the west central portion of SFAAP. The site was brought into operation in 1943 to decontaminate scrap metal (which was later salvaged) and to burn other combustible material that had been contaminated with explosives or propellants. Prior to 1970, burning of contaminated materials occurred in two open trenches. However, in about 1970, two unlined 30 x 300 ft pads were installed where the trenches were located. The pads were separated by an earthen berm. Contaminated material accumulated at the site until the pad was full, which generally took approximately 1-2 months. Burning was initiated using diesel fuel, waste oils, and scrap wood (including telephone poles). SFAAP randomly sampled the remainder of the residue for TCLP metals (leachable), and upon negative results disposed the ash in the sanitary landfill. After one pad was burned, the other pad began receiving materials for the next burn. During a site visit in 1990, burn areas were observed away from the main burn pads. Also located on the site was an open top tank, approximately 8 ft in diameter, which was used to burn waste solvent. Adjacent to the tank was an elevated platform which appeared to have been used as an unloading dock for liquids to be emptied into the tank. At the time of a 2001 site visit, the tank contained water. Groundwater and surface water runoff from the burn area flow northwest to Captain Creek or the adjacent Oxbow Lake.

#### SWMU 22 - Old Explosive Waste Burning Ground

The Old Explosive Waste Burning Ground (approximately 30 acres) is located north of the Contaminated Materials Burning Ground (SWMU 21) in the west central portion of SFAAP. In this area, waste explosives including NG slums (i.e., NG mixed with sawdust for stabilization) and various propellant formulations from the sumps, filters, and drains in the production areas were disposed by open burning. The site was in operation from 1943 to 1980. SWMU 22 is approximately 7 acres and has 5 burning pads, and a NG slums burning area.

#### SWMU 23 - New Explosive Waste Burning Ground

The New Explosive Waste Burning Ground (approximately 17 acres) replaced the Old Explosive Waste Burning Ground (SWMU 22) for disposal of explosive waste by open burning in 1980. It is located in the southwest portion of SFAAP and consists of a diked earthen pad measuring 130 x 340 ft. A maximum of 5,000 lbs of explosives may be burned on this pad at one time, and smaller quantities may be detonated. Waste NQ, GN, explosives, and propellants of various formulations were burned at this site. Releases to the soil were reportedly evident, as indicated by stained soils observed at the time of a site visit conducted in 1990. This unit has RCRA interim status for treatment of hazardous waste. SFAAP completed closure under RCRA hazardous waste management regulations and the closure certification was submitted to the KDHE in 2000. The KDHE approved clean closure of the New Explosive Waste Burning Ground in 2000.

#### SWMU 24 - Nitroglycerine And Paste Mix Area

The Nitroglycerine and Paste Mix Areas (approximately 149 acres) are located in the central portion of SFAAP. NG manufacturing in this area began prior to the end of World War II and continued until 1971. Two operating lines provided nitroglycerine (NG) for use in the paste area. There were several recorded instances where NG spilled onto the soil in the NG area. The amount of NG spilled ranged from 1-2 lbs to a 1,200 lbs spill in August of 1944. This site drains into Pyott's Pond. The buildings have been removed by burning. Field observations in 1985 indicated the main ditch contained between ten and fifteen inches of stagnant water, with grass present throughout most of the length. Investigation activities identified 11 sumps as possible explosive hazards. The sumps have been fenced to limit access. Remote sampling of the 11 sumps and ditches in FY04 indicated that NG concentrations are well below explosive levels and therefore no Explosive Safety Submission is required. Elevated levels of lead in soil and surface water were detected, probably resulting from drainage from the paste area. This site also includes the piping from the 11 nitrator buildings to their respective sumps, and the areas immediately around the buildings, due to documented spills. This site also includes potential residual contamination in the paste mixing area.

#### SWMU 25 - Nitrocellulose Area Ditches

The Nitrocellulose Area Ditches (approximately 4,100 linear feet) are located in the north central portion of SFAAP. This SWMU consists of the ditches leading from the Nitrocellulose Area to Pond A. Nitrocellulose (NC) is prepared by the reaction of cotton linters (cellulose) and a mixture of nitric and sulfuric acids. NC was produced during two periods, 1943 through 1960, and 1965 through 1971.

#### SWMU 26 - Single Base Propellant Area, Waste Water Settling Sumps

The Single Base Propellant Area (approximately 501 acres) consists of a series of buildings in the north-central portion of SFAAP. Single base propellant for small arms, cannon, and rockets



was produced in this area during the periods of 1943-1948, 1951-1960, and 1965-1971. Solvents (acetone, alcohol, ether) were used in the Single Base Propellant process. There were four different types of production buildings in this area numbered 1600, 1650, 1700 and 1725 series. There were wastewater sumps adjacent to each of the 1600 and 1650 series buildings, which were designed to settle out solids from the building's wastewater. Flow equalization tanks were located adjacent to each of the 1700 and 1725 series buildings. Each of these tanks was covered by an open wooden grate. Wastewater from the sumps and tanks was discharged to a collection sewer, which eventually discharged to open ditches. These ditches discharged west into Captain Creek. The three southeast buildings' wastewater drained east and eventually discharge into Pond A. In 1985, all the sumps contained standing water, soil, and pieces of rotted wood from the baffles, all of which appeared to have partially decayed. The buildings in this area were undergoing removal via demolition and burning in 1990. At the time of the 1992 site visit, some of the buildings which fed the sumps had already been removed.

#### SWMU 27 - Nitroguanidine Area SAC & LWTP Evaporative Lagoons

The Nitroguanidine Area SAC & LWTP Evaporative Lagoons (approximately 10 acres) are located in the northwest portion of SFAAP. The Sulfuric Acid Concentrator (SAC) Liquid Waste Treatment Plant (LWTP) went into operation in 1984. It consisted of a 45,000-gal tank for distillate and a 17,000-gal tank for other corrosives. It received corrosive distillate from the SAC and some corrosive wastewater from the NQ production processes. Lime neutralizers were added to the acidic wastewater, which then flowed into the two Evaporative Lagoons located south of the LWTP. The wastewater transfer line from the LWTP to the evaporative lagoons had documented releases. The lagoons were constructed in 1984. At the time of the 1987 investigation, the lining of the lagoons appeared damaged. Observations of higher soil moisture and occasional small amounts of water at the base of the berm on the west side of the southern lagoon indicated releases were occurring. The lining was replaced. It was reported that when the liner was replaced in one of the lagoons, the breaks in the old liner indicated that release to the underlying soil did occur. The lagoons have been filled in and final grading and seeding was designed for minimal surface water infiltration and erosion.

#### SWMU 28 - Waste Calcium Carbide Treatment Area

The Waste Calcium Carbide Treatment Area includes a concrete pad and a lagoon located in the Nitroguanidine production area in the northwest portion of SFAAP. The SWMU was used treat waste calcium carbide from the manufacture of nitroguanidine. Calcium carbide exhibits the hazardous waste characteristic of reactivity. Therefore, SWMU 28 was a hazardous waste management unit and requires closure pursuant to RCRA. SWMU 28 was closed in accordance with the interim status requirements for closure in 40 CFR Part 265, subpart G. KDHE approved the closure plan for SWMU 28 and has accepted the Army's certification for its clean closure.

#### SWMU 29 - Industrial Wastewater Lagoons

The Industrial Wastewater Treatment Lagoons are located south of the Ash Lagoon and Sludge Disposal Area (SWMU 20). The SWMU was used to treat runoff from a coal pile and

wastewater from the powerhouses. The wastewater would exhibit the hazardous waste characteristic of corrosivity or exceed the levels for the Toxicity Characteristic Leaching Procedure. Therefore, SWMU 23 was a hazardous waste management unit and requires closure pursuant to RCRA. SWMU 29 was closed in accordance with the interim status requirements for closure in 40 CFR Part 265, subpart G. KDHE approved the closure plan for SWMU 29 and has accepted the Army's certification for its clean closure.

#### SWMU 30 - Pesticide Handling Area

The Pesticide Handling Area (20 acres) is located in the north central portion of SFAAP, with a new building erected a short distance from the old structure that it replaced. The old facility and its surrounding area were reportedly cleaned of pesticide residues. The new facility met United States Army Environmental Hygiene Agency's Criteria for Design of a Pest Control Shop, Pesticide Storage and Mixing Facility. It has been in operation since 1984. The facility contains four sumps, one in each area: the pesticide storage room, the herbicide storage room, the inside mixing room and the outside mixing area. All liquid within the sumps is recycled into formulations, and there is no discharge from the sumps. No spills or releases have been recorded for this site. During a Preliminary Review site visit to the Pesticide Handling Area in 1990, an aqua-blue stain was evident at the outside sump and outside the pesticide building. It was identified as a dibromide solution which is sprayed in areas where herbicides/pesticides are used. Any contamination is assumed to have resulted from operations at the former area. It was also noted that stressed vegetation was observed leading from the shop and following a newly constructed road; however, SFAAP personnel indicated an underground steam line in the area may have impacted the vegetation.

#### SWMU 31 - Contaminated Waste Processor/ Evaporative Lagoon

The Contaminated Waste Processor (CWP) and Evaporative Lagoon (approximately 8 acres total) are located in the central portion of SFAAP close to its western border. The CWP is an incinerator measuring approximately 40 x 60 ft. The CWP was designed to incinerate materials contaminated or suspected of being contaminated with explosives, and to decontaminate (flash) explosive-contaminated metal prior to salvage. Because the CWP could only handle materials with residual amounts of explosives, the waste materials to be incinerated were checked to insure they did not contain pockets of explosives. Waste residuals from the CWP were also analyzed for EP Toxicity. If results indicated the waste was hazardous it was treated/disposed off-site at a hazardous waste treatment facility. Otherwise it was landfilled on-site. The CWP operated between 1982 and 1996. Three existing monitoring wells have been in place around the lagoon since 1981. There is a potential for trace concentrations of explosives and propellant compounds such as NG, DNT, and soluble lead to be present after incineration. While these would not be explosion or fire hazards, they may be soluble and could potentially contaminate groundwater.

#### SWMU 32 - Lead Decontamination And Recovery Unit

The Lead Decontamination and Recovery Unit (approximately 0.7 acres) is located on the central portion of SFAAP near the western border. The facility borders the Captain Creek flood plain.

Surface drainage is toward a southwest drainage ditch which subsequently drains west near the Old Explosive Waste Burning Ground (SWMU 22) to Captain Creek. Some runoff also eventually drains into an oxbow lake near Captain Creek. The site consists of a small building and melting rack within a paved area, and encompasses approximately one half acre. The Recovery Unit was in operation from 1943 to 1970. Contaminated lead recovered from routine maintenance activities in the acid, NG, and propellant manufacturing buildings was placed on a rack and suspended over a tank. An overhead heater melted the lead, which then dropped into the tank. The lead was drained into molds and made available for salvage. Lead solids have been observed scattered throughout the site.

#### SWMU 33 - Paste Area Half Tanks And Ditches

The Paste Area is located in the central portion of SFAAP just northeast of the NG Area. The Half Tanks in this area received wastewater from wash down of propellant processing equipment and buildings in the Paste Area, and possibly from buildings in the NG Area as well. They were used between the mid 1960s and 1971. The tanks discharged into 2 unlined settling ponds, then to Pyott's Pond. There are 2 steel Half Tanks (area totaling approximately 1 acre) located up gradient from each of the settling ponds and are designated Half Tank 33/34 and 33/35. The 33/34 tanks are located southeast of the Paste Area between the Five Corners Settling Ponds and the Paste Sump, and the 33/35 tanks are located northwest of the Paste Area near the NG Settling Ponds. According to a survey, the settling ponds were abandoned and in disrepair. As a result, unidentified quantities of NC and NG were known to be in and around the lagoons. Reportedly, overflowing of the metal flumes and half tanks occurred. There was no secondary containment.

#### SWMU 34 - Five Corners Settling Ponds

The Five Corners Settling Ponds (approximately 0.4 acres) are located in the central portion of SFAAP, immediately south of the Paste Area and immediately east of the NG Area. There were 2 earthen, unlined ponds (Ponds 5A, 5B), each approximately 40 ft in diameter. The ponds were used periodically from the early 1950s to 1971. There are no containment berms surrounding these ponds. The Five Corners Settling Ponds received NG wastewater resulting from the wash down of equipment and buildings and from sprinkler trips.

#### SWMU 35 - Nitroglycerin Area Settling Ponds

The Nitroglycerine Area Settling Ponds (approximately 0.4 acres) were located in the central portion of SFAAP, at the northeastern edge of the NG Area just north of the Paste Area. The 2 ponds (Ponds 6A, 6B) were used periodically from the early 1950s to 1971 to receive wastewater resulting from the wash down of equipment and buildings, and from sprinkler trips. The propellant solids and sludge which settled in the ponds were occasionally removed during production and burned at the burning grounds. These ponds were investigated in 1985 and designated as Pond 6A (the southern pond) and Pond 6B (the northern pond). During site visits in both 1985 and 1987, Pond 6A was reported to contain approximately 16 inches of standing water, while Pond 6B was dry. Both ponds contained approximately 12-18 inches of sediment which appeared to be soil.

#### SWMU 36 - N-Line Area

The N-Line (approximately 301 acres) is located in the south central portion of SFAAP. Production occurred in this area during three periods of operation: 1943 through 1946; 1951 through 1960; and 1965 through 1971. In this area the final machining and inspection of extruded and cut propellant grains occurred. Off-spec materials and trimmings were sent to a grinding mill and then back to the F-Line Area for re-blending. Wastewater originated primarily from floor and equipment washing and flowed through floor drains into unlined ditches which lead to a small tributary of Spoon Creek. There were approximately 20 eastwardly trending ditches and 2 concrete settling sumps. During the late 1980s, the ditches were reportedly well vegetated, except those which received storm water. Propellant solids containing NG and lead salts settled in these ditches. The propellant formulations stored in this area were single or double base and were generally reactive. The N-Line was known as the solvent-less propellant area along with the F-Line. In 2001, this site was increased in size. This additional area will need to be investigated. The two Tunnel Dryers (SWMU 43) within this SWMU boundary will be investigated and cleaned up under this site.

#### SWMU 37 - Sandblast Areas

Sandblasting occurred in several locations (totaling approximately 3 acres) during various periods of operation. From approximately 1964 to 1969, an area east of the former Maintenance Office Building 245-3 was used for sandblasting. Between 1980 and 1984, an area west of the Paint and Sign Shop Building 504 was used. Additionally, documents indicate an area south of the Equipment Storage Building 566-1 was used. It is believed this area was used prior to 1980, but records of this use were not available. Sandblasting was used to prepare equipment such as motors, pumps, pipes, trailers and heavy equipment for painting and preservation. The bulk of the sand recovered was disposed in the sanitary landfill; however, residual sand was left on the ground in these areas. In addition, sand was not contained during the sandblasting operations and was therefore able to migrate through the air. The primary concerns at these sites are paint wastes and their constituents, especially metals such as lead, chromium, and cadmium.

#### SWMU 38 - Oil Water Separator

The Oil Water Separator (approximately 0.5 acres) was located in the north central portion of SFAAP. It began operation in 1971 to service the auto maintenance shop located in Building 542. A majority of the flow to the separator was derived from the floor drain in the car wash bay. Additional wastewater sources include rainwater and condensate from steam radiators used to heat the building. Although no oil or grease was reportedly dumped into the drains leading to the separator, a small quantity of sludge collected in the tank. Sludge was removed from the tank in 1987 and tested for TCLP prior to transfer to the Sanitary Landfill (SWMU 18). This was the first recorded removal of sludge. During a site visit in 1990, the integrity of the tank was questioned because there was influent to the separator, but the tank did not appear to be filling. Oil stains and bare ground were noted under and downgradient of the half tank. It was also indicated that there was visual evidence of potential releases to the surface water and soil.

#### SWMU 39 - South Acid Area Ditches

The South Acid Area Ditches (11 acres) is located in the east central portion of SFAAP. Two primary drainage ditches originate near the Calcium Cyanamide Disposal Area (SWMU 40). A third influent ditch from the NG and Paste Mix Areas joins the west ditch. All three ditches discharge into Pyott's Pond. During a site visit in 1990, the surface water observed in the east ditch was tinted orange; a white precipitate was observed along both ditches. Reportedly the orange color was caused by the neutralization of acidic ferrous sulfate and sulfuric acid with hydrated lime. The sediment was reported to contain ferrous sulfate and calcium sulfate. Wastes handled at this site include sulfuric and nitric acids, and wastes from the SAC LWTP which may have contained NQ.

#### SWMU 40 - Calcium Cyanamide Disposal Area

The Calcium Cyanamide Disposal Area (approximately 2 acres) is located in the east central portion of SFAAP. Waste from the operation of the NQ pilot plant was disposed of in a natural ravine at this site. Calcium Cyanamide was generated for wet guanidine nitrate (GN) production and delivered to the NQ pilot plant from the main NQ Area. Whenever the carbide content was too high for acceptance at the pilot plant, the calcium Cyanamide was taken to the Calcium Cyanamide Disposal Area. The calcium Cyanamide sludge was disposed of in this area for only a 3-month period in 1982. The waste material, consisting of calcium Cyanamide and fluorspar, was later covered to form a landfill, and enclosed by a barbed-wire fence. The fenced-in area comprises approximately one acre; however, less than half of the area was actually used for disposal of the calcium Cyanamide waste. The 200' X 60' disposal area is located in the northeastern portion of the landfill, an area which is now a grassy plateau which slopes downward approximately 15 ft. An evaporation pond is located in the southwest portion of the landfill. White and black stains were observed along the edges of the pond during site visits in 1989 and 1990. There is some concern that the surface water runoff from this site drains to Pyott's Pond via the South Acid Area Drainage Ditch discussed in the previous section (SWMU 39).

#### SWMU 41 - Calcium Carbonate Cake Landfill

The Calcium Carbonate Cake (CCC) Landfill (approximately 2 acres) is located in the west central portion of SFAAP. It measures approximately 350 x 315 ft and was operated from May 1986 to June 1988. Between May 1988 and December 1991, the CCC was provided to farmers rather than landfilled. This practice was discontinued in December 1991. Initially, containerized CCC was disposed of at this site, but later uncontainerized CCC was deposited. The source of CCC was NQ production. CCC is a byproduct of GN manufacturing. GN is an intermediate product of NQ. A leachate collection system was installed in the CCC Landfill at the time of construction. The leachate in the collection system tank is monitored. During a site visit in 1990, it was noted that the landfill cap was cracked, vegetative cover was sparse, and erosional features had developed. In 1998, the landfill cap was repaired and graded to minimize erosion. Also, new ground cover was established.

#### SWMU 42 - Temporary Sanitary Landfill

The Temporary Sanitary Landfill (approximately 3 acres) is located in the west central portion of SFAAP, adjacent to the CCC Landfill discussed in the previous section (SWMU 41). It was used to manage non-hazardous solid waste consisting of general trash and sanitary waste. CCC was initially landfilled in the first cell; however, that practice was discontinued. During the site visit in 1992, it appeared that the landfill consisted of three cells.

#### SWMU 43 - Tunnel Dryers (CCC Storage)

There are a total of six Tunnel Dryers (8 acres); all were used for temporary storage of CCC. Four of the dryers are located in the west central portion of SFAAP. The 2 remaining dryers are located in the southern portion of SFAAP and will be handled under SAAP-036. The dryers began operation in 1986. Each dryer measures approximately 125 x 18 ft, with 6 ft high walls, and each has a leachate collection system. CCC was a byproduct of the GN step of the NQ production process. The CCC was loaded into dump trucks via conveyor in the NQ area and transported to the tunnel dryers. The CCC was dumped into the dryer and arranged using a front-end loader. The product was ultimately offloaded from the tunnel dryers by vendors. The tunnel dryers were not enclosed. During a site visit in 1990, it was observed that CCC had been tracked beyond the walls of the tunnel dryers by the trucks loading and unloading at the site.

#### SWMU 44 - Tank T784

Tank T784 (approximately 1 acre) is located in the northwest corner of the NQ area in the northwest portion of SFAAP. Limited production began in the NQ Area in 1981. Tank T784, also known as Structure 9049, is a vertical steel above ground wastewater collection tank which held cooling tower blowdown water, NQ crystallizer condensate, GN evaporator condensate, and non-contact cooling water. A pipe discharged the wastewater from T784 into the River Water Treatment Plant (RWTP) Lagoons (SWMU 2), via an underground transfer line. This pipe follows the north plant boundary before turning directly north towards the lagoons. Several releases have occurred as a result of breaks in the RWTP Lagoon transfer line. Tank overflows have also occurred. There are no spill containment structures for the tank.

#### SWMU 45 - Building 9040 (Calcium Cyanamide Conveyors & Storage Unit)

Building 9040 (approximately 2 acres) is the wet GN building. It is located in the central part of the NQ Area in the northwestern portion of SFAAP. The NQ Area began limited production in 1981. Calcium Cyanamide was produced in Building 9004 and transferred via belt conveyor to Building 9040 for use in the GN process. The belt conveyor, which lead to storage bins located on the east side of Building 9040, is enclosed in an elevated, sheet metal galley way. There are four 175-ton storage bins. Calcium Cyanamide was released at the bins because of problems with the screw conveyors used to transport material from Building 9004. A concrete pad was constructed in a small portion of the area under the storage bins; however, the pad was too small to effectively contain the spillage, especially in windy conditions. Bare spots were observed in

areas near the storage bins. A drainage divide is located in the NQ Area running east of Building 9040. It separates the Captain Creek drainage area from the area drained by unnamed creeks flowing northward toward the Kansas River.

#### SWMU 46 - Decontamination Oven

The Decontamination Oven (approximately 2-acre site) is located in the northeast portion of SFAAP. The oven was constructed in 1970 and was used to decontaminate oversized equipment/materials contaminated with trace explosives. There were no secondary containment features at this site. Only trace explosives were treated in this area. It may have been possible for volatile contaminants to be released via the exhaust fan during heating. Lead may have been released from the equipment and vehicles decontaminated at this site.

#### SWMU 47 - Nitroguanidine Production Area Sumps

The NQ manufacturing facilities are located in the northwest corner of SFAAP. Construction of these facilities began in the late 1970s with limited production during 1981. In August 1984, the plant began bulk production of NQ, and ceased bulk production in August 1992. There are 25 sumps (totaling approximately 0.7 acres) in the NQ Area. Each of the production buildings had dedicated sumps outside the buildings which received wastewater generated by operations in the NQ Area. The wastewater resulted from equipment wash downs, spills, runoff, and non-contact operations, such as cooling water and steam condensate. The wastewater may have been acidic and may potentially have contained contaminants such as NQ and GN, as well as raw process materials or intermediates of the NQ process.

#### SWMU 48 - Nitroguanidine Support Area

The NQ Support Area (approximately 6 acres) is located in the north central portion of SFAAP in Buildings 2000 and 2012. The equipment included dryer bays, aboveground storage tanks, and half tanks. This was the location of the pilot-scale production plant known as the NQ Support Equipment (NSE) facility. The NSE facility was constructed during 1977-1980 and was operated periodically as a partial prove-out from May 1979 to June 1984. In August 1984, the main NQ plant began production. The majority of the pilot plant was demolished sometime following shut down; however, Buildings 2000 and 2012 are still present. This site was the location of the former nitrocellulose production facility, used from 1942-1971.

#### SWMU 49 - Road Just Southeast Of The Sanitary Landfill

The road just southeast of the Sanitary Landfill is located on approximately 6 acres near the central western border of SFAAP. Along the road located just east of the Old/New Sanitary Landfill (SWMU 18) is a steep slope, which, upon inspection, revealed the presence of drums, construction rubble and other refuse apparently, underlying the road. It appears the road may have been built over the landfill or may be comprised of fill from the landfill to construct the road base. A geophysical survey indicated the presence of subsurface anomalies south of SWMU

18 that may include metal objects. During investigation of SWMU 18, track excavator was used to delineate extent of waste disposal area. No waste was detected.

#### SWMU 50 - Disposal Site East Of The Classification Yard

SAAP-50 consists of two areas. The first area (50 north) is an abandoned dump site (approximately 6.5 acres) that was discovered just inside the eastern boundary of SFAAP near Kill Creek. The second area (50 south) consists of another abandoned dump site (approximately 3.2 acres) immediately adjacent to the other area. The debris scattered about both sites includes shingles, drums and metal slag. An interim removal was taken by the Army to remove the lead contaminated soil and debris. Additional debris was removed and rip-rap was placed over select areas to stabilize the bank in 2000. In 2004, additional debris removal was conducted and new riprap was placed on an exposed disposal area on the north disposal site.

#### SWMU 51 - New Reclamation Yard

The New Reclamation Yard is located on approximately 8 acres in the north central portion of SFAAP and includes the Battery Handling Area. The yard was used to stage scrap materials and excess equipment. Scrap was decontaminated to 5X standards (open burning) prior to sale or reclamation. In the battery handling area, battery parts were observed on the ground. Wastes typically associated with batteries include acids and metals, particularly mercury, lead and/or cadmium, depending upon the type of battery. This site has been expanded from just the Battery Handling Area to include the entire Reclamation Yard.

#### SWMU 52 - Paint Bay Building 542

Building 542 (approximately 0.4 acres) is located in the north central portion of SFAAP. A paint bay, located within the building, was used to repaint vehicles. Fumes and overspray were vented through the side of the building where stressed vegetation has been observed. Wastes typically associated with paint bays include volatile organics and metals such as chromium, cadmium and lead.

#### SWMU 53 - Burn And Debris Area North Of STP

The Burn and Debris Area North of STP (Sewage Treatment Plant) is located on approximately 5 acre in the northeast portion of SFAAP. A sequence of aerial photographs taken of SFAAP beginning in 1941 and ending in 1991 show the old Burn and Debris Area. An inspection was done on September 18, 1997. A wood pile is still there, but the road is covered over with vegetation. The debris begins around the fence line near the main road by the sewage treatment plant. It is comprised of construction debris including heavy duty concrete rubble, rusted out 55-gallon steel drums, glass rubble, broken insulators, pipe debris, wood scraps, telephone poles, wire fencing, concrete pipe pieces, iron scraps and asbestos materials. The debris covers approximately 1 acre and extends from the fence line, following the creek until reaching the open area where a quarry existed. Debris is on both sides of the creek and in the creek bed itself.



#### SWMU 54 - Fluorescent Tube Wells

SWMU 54 is comprised of three Fluorescent Tube Wells (totaling less than 1 acre). One well is located in the northwestern portion of SFAAP, east of the NQ production area. A second well is located in the northeastern portion of SFAAP, southeast of building 211. The third well is located in the east central portion of SFAAP, south of the Ballistics Area. The sites consist of hand dug water wells that were part of old pre-SFAAP homesteads. One of the wells is five feet in diameter, about twelve feet deep and lined with concrete. This well was used as a fluorescent tube disposal pit. It is uncertain when this occurred, but is suspected to have taken place prior to 1976. The well was uncovered and full of water. Fluorescent tubes contain mercury. An additional two wells were identified as being used for fluorescent tube disposal. The broken fluorescent tubes and contaminated soil were removed from all three wells. This site includes the well identified in the Environmental Baseline Survey (EBS) prepared for the Army by Aguirre Engineers, dated October 1998. All three wells were closed in accordance with KDHE well abandonment requirements in 1994.

#### SWMU 55 - Old Administrative Buildings

The Old Administrative Buildings are located in the northeast portion of SFAAP. SWMU 55 is soil with potential lead-based paint contamination next to the Old Administration Buildings.

#### SWMU 56 - Well South Of Facility 211

The Well South of Facility 211 is located in the northeast portion of SFAAP. SWMU 56 is the area of nitrate/nitrite contamination in the area south of Facility 211. Contamination has been documented in a monitoring well south of this facility.

#### SWMU 57 - Chemical Preparation House

The Chemical Preparation House (Facility 507-2) is located in the north central portion of SFAAP. Chemicals may have been disposed on the ground outside of this building.

#### SWMU 58 - Combined Shops Area

The Combined Shops Area (approximately 24 acres) is located in the north central portion of the plant, and was used for maintenance activities and repairs. There are a total of 30 facilities in the area. The facilities include: three offices, the fuel oil unloading station, storage and distribution center, 12 storehouses, and nine shops. There was a Tram Repair Shop that was converted into a Heating Plant (Formerly Facility 522, Currently Facility 154-5). Several facilities in the Shop Area are visibly stained.

#### SWMU 59 - Laundry Facility

The Laundry Facility (Facility 4562) is located in the north central portion of the plant. This facility was used to launder worker clothing to remove process wastes and propellant contamination. The Laundry Shop was a single story facility with a concrete floor containing several sumps and drains. There were two fuel oil tanks located outside of the facility.

#### SWMU 60 - Old Photographic Laboratory

The Old Photographic Laboratory (approximately 3 acre site) is in the southeast corner of the Old Administration Building No. 2 (Facility 214), which is located in the northeast portion of SFAAP. Wastes from the laboratory were commonly dumped into the sink, which discharged directly to soils behind the facility.

#### SWMU 61 - Environmental Laboratory (Facility 232)

The Environmental Laboratory (Facility 232) is located in the north central portion of the plant. The Environmental Laboratory was built in 1982 and contains sumps and drains. Past waste disposal practices are not documented. This was an active lab until January 2003.

#### SWMU 62 - Transformer Storage Warehouse (Facility 566-5)

The Transformer Storage Warehouse (Facility 566-5) is located in the north central portion of the plant. At the time of the EBS, this facility stored 149 replacement transformers. All of these transformers were removed off-site in 2003. Based on visual inspections, several stains were observed on the concrete floor, and some of the transformers stored in the facility were observed to be leaking. The facility is considered a potential area of concern. All of the transformers stored were tested for PCB content and were below 50 ppm; however, labels were lacking on most of the transformers. It was impossible to determine if all the stains noted were caused by the transformers stored at that time or by transformers previously stored at the facility.

#### SWMU 63 - Water Towers

The Water Towers (approximately 7 acres total) are located throughout the plant. There are 8 water towers consisting of the north towers #'s 1, 2, 3 and 4 and the south towers #'s 5, 6, 7 and 8. The surface soil surrounding the Water Towers are contaminated with lead, originating from lead-based paint. The towers were painted several times before 1978, and sandblasted each time before they were repainted. Documentation was available to confirm that no measures were taken to contain the removed paint during or after sandblasting operations. Two other water towers located in the NC Production Area will be remediated under AOC 16.

#### SWMU 64 - Paper Burning Ground

The Paper Burning Ground (approximately 3 acres) is located in the east central portion of the plant. A trench was observed on aerial photographs encompassing 200 X 30 feet. Contaminants may have extended to a depth of 5 feet below ground surface.

#### SWMU 65 - Tank Farm

The Tank Farm site (approximately 22 acres) is located in the north central portion of the plant. The tank farm received and processed recycled solvents which included alcohol, ether, and acetone. Numerous releases have been documented from within the Tank Farm. Although the tanks were removed, the foundations and saddles remain. This site has not been used since the 1960s.

#### SWMU 66 - Installation-Wide Stream Study

In Feb 2000, EPA ordered SFAAP to conduct stream monitoring. This site will be designated for sampling the installation-wide streams of Captain (approximately 10,861 linear feet), Hanson (approximately 6,900 linear feet), Kill (approximately 9,097 linear feet), and Spoon (approximately 18,506 linear feet) Creeks. Initial stream surface water and sediment sampling was conducted under SAAP-014, except for Hanson Creek, which was conducted under SWMU 2. Phase I of the stream sampling was completed in 2003. Phase I included sediment and surface sampling. Sediment sample contaminants found in Phase I include arsenic, nitrocellulose and petroleum hydrocarbons. Surface water sample contaminants found during Phase I include manganese, dieldrin, di-n-octyl phthalate and lead. Phase II is completed, which included surface water sampling only. Phase III includes surface water sampling to characterize changes over time.

#### SWMU 67 - South Acid Area

The South Acid Area (approximately 26 acres) is located in the east central portion of SFAAP, and consists of tanks, troughs, pipes and other conveyances. The plant manufactured nitric and sulfuric acids. This area was used from 1942 to 1980. This site includes the areas identified as AOC 7-Former Truck Maintenance Shop in South Acid Area, AOC 8-Former Fuel Oil Storage Tank in South Acid Area, and AOC 9-Oil and Paint House in South Acid Area. The ditches from the South Acid Area to Pyott's Pond are included in SWMU 39.

#### SWMU 68 – New Industrial Waste Water Treatment Plant

SWMU 68 is the New Industrial Waste Water Treatment Plant constructed for treatment of industrial wastewaters during production of propellant at SFAAP. The SWMU is comprised of all the buildings, storage and treatment tanks, sumps, drum storage areas, piping, and sewers. SWMU 68 also includes a laboratory and office building. The SWMU is located in the central portion of SFAAP south of the North Acid Area (SWMU 7, 8, 9) and the New Reclamation Yard (SWMU 51).

#### AOC 1 - Monitoring Well West Of Old Admin Area

The Monitoring Well West (32 acre site) of the Old Administration Area is located in the northeast portion of SFAAP. AOC 1 is the area of nitrate/nitrite groundwater contamination west of the Old Administration Area. Contamination has been documented in a monitoring well in this area.

#### AOC 2 - Main Electrical Switch Yard

The Main Electrical Switch Yard (Facility 154-4) is located in the center of the plant. Based on interviews with former employees, a transformer fire resulting from a lightning strike occurred around 1945. The majority of the transformers (assumed to contain PCBs based on the time period) were said to have been destroyed by the fire. This site was active until 2003. The transformers were removed in 2003.

#### AOC 3 - New Photographic Laboratory

The new Photographic Laboratory (Facility 227-18) (approximately 0.2 acres) is located in the north central portion of the plant and operated between 1990 and 1998. Based upon interviews, a common waste disposal practice in the photography laboratories was to dispose of the wastes in the sinks. The location of the sink drain outfall has not been identified.

#### AOC 4 - Disposal Area Southeast Of STP

The Disposal Area (approximately 0.3 acres) Southwest of the STP (Sewage Treatment Plant) is located in the northeast portion of SFAAP. This AOC is the area southwest of the STP where several trenches were noted on historical aerial photographs. This area may have been the Mess Hall Landfill.

#### AOC 5 - Cannon Range Tunnels (Facility 303)

The Cannon Range Tunnels are located in the eastern portion of SFAAP. The Army fired 2.75 inch inert rockets into these tunnels at this site. During the 1998 EBS site investigation of the Cannon Range Tunnels (Facility 303), it was noted that 32, 55-gallon drums were stored within the southern tunnel. It was later determined that these drums contained investigation-derived waste. Iron piping material, commonly used for explosive reactivity testing, was observed in the drums. The greatest potential for surface soil contamination was anticipated to be along the firing line leading from the platforms to the tunnels and within the tunnels. During a 1988 RI field program conducted at the Cannon Range, six surface soil samples were collected downrange of the firing line and a composite sample was collected from each tunnel. Samples were analyzed for priority pollutant metals, explosives, and TCLP. Analytical results indicate that explosives and metals were present in the soil at low levels. All drums located in the Cannon Range Tunnels were moved to a central storage area for future disposal or if clean were disposed off-site.

#### AOC 6 - 35 Process Facilities Within F-Line Area

Thirty-five process facilities (89 acres) located to the west of the Press House in the F-Line Area, in the east central portion of the plant. AOC 6 is located in Parcel 2-18(7)HR(P) shown in the EBS. This parcel has been delineated to include each of the following facilities D120-7, F120-4, F120-8, 181-3, 563, 5815-1, 5815-2, 5815-3, 5816-2, 5822, 5823, 5837, 5850, 5861, 7803-1, 7803-2, 7803-3, 7803-4, 7814, 7815-1, 7816-1, 7816-2, 7816-3, 7826, 7827, 7828, 7832, 7866, 7868-1, 7868-2, 7868-3, 7868-4, 7871-2, 7897, and 7898. This site was handled under SWMU 10.

#### AOC 7 - Former Truck Maintenance Shop in South Acid Area

AOC 7 consists of the area where a methylene chloride release was detected in the South Acid next to the Former Truck Maintenance Shop. AOC 7 is consolidated under SWMU 67.

#### AOC 8 - Former Fuel Oil Storage Tank in South Acid Area

AOC 8 consists of the area where a chloroform release was detected in the South Acid next to the Former Fuel Oil Storage Tank. AOC 8 is consolidated under SWMU 67.

#### AOC 9 - Oil and Paint House in South Acid Area

AOC 9 consists of the area where a methylene chloride release was detected in the South Acid next to the Oil and Paint House. AOC 9 is consolidated under SWMU 67.

#### AOC 10 - Storage Magazines Not Part Of SWMUs 15 & 16

The 80 storage magazines (approximately 541 acres) not included in SWMUs 15 and 16, are on the southern end of the plant. These magazines were used to store processed powder and propellants.

#### AOC 11 - Forced Air Dryers And Rest, Screen And Can Pack Houses

AOC 11 consists of over 50 buildings designated as Forced Air Dryers, Rest Houses, Screen Houses, and Can Pack Houses. Located in the west section of the plant, this area processed both solvent propellant.

#### AOC 12 - Paste Air Dry Facilities

AOC 12 consists of the former Paste Air Dry facilities. Located in the center of the facility, this site consists of 16 buildings (approximately 36 acres) used as paste drying facilities that were part of the N-line operations. All of the buildings have been burnt with only foundations remaining.

#### AOC 13 - General Warehouses (8037 Series)

The 8037 series warehouses consist of eight large warehouses that have been listed as containing such items as unused NQ drums (pre-NQ packaging) storage, acid plant parts and supplies, and 3X contaminated equipment interim storage. AOC 13 includes the warehouse buildings and adjacent railroad/loading dock areas.

#### AOC 14 - Robert's Lake

Robert's Lake (approximately 12 acres) is located south of the Old Sanitary Landfill and west (downgradient) of the G-line ditches. Roberts Lake may have received contaminated wastewater or contaminated runoff.

#### AOC 15 - Hazardous Analysis Testing Lab

The Hazardous Analysis Testing Laboratory (approximately 1 acre) is located in the north central portion of the plant. This area consists of an indoor firing range which has piles of sand containing expended small-caliber test projectiles. The sand piles are situated just outside a door on the south side of the building and a door on the north side of the building. Both sand piles measure 60 X 30 feet.

#### AOC 16 - NC Production Lines

The former Nitrocellulose (NC) production lines (approximately 107 acres) were located in the north central portion of the plant. Each production line is approximately 10 acres in size and contains 10 or more buildings. The majority of the buildings have been burnt and all that remains are the concrete foundations. The NC Production Lines produced NC during the periods of 1943-1960, and 1965-1971. Nitrocellulose and other hazardous constituents were released to the soil and potentially the groundwater in the proximity of the production facilities.

#### AOC 17 - NQ Production Facilities

AOC 17 includes all buildings which have been identified as being potentially contaminated from NQ production. The NQ Production Facilities are located in the northwest portion of SFAAP. Based a review of the documents, visual inspections and interviews, there is evidence that NQ and GN contamination was observed leaching out of walls and floors during visual inspection.

#### AOC 18 - Trench Disposal Area A3

AOC 18 is the Trench Disposal Area (approximately 34 acres) identified as A3 in 1948 aerial photographs from disturbed ground west of SWMU 1, the Classification Yard located in the northeast portion of SFAAP.

#### AOC 19 - Trench Disposal Area A4

AOC 19 (approximately 0.6 acres) is the Disposal Site identified as A4 in 1948 aerial photographs from disturbed ground on the southwest end of SWMU 1, the Classification Yard located in the northeast portion of SFAAP.

#### AOC 20 - Trench Disposal Area A5

AOC 20 (approximately 0.5 acres) is the Disposal Pit identified as A5 in 1948 aerial photographs from disturbed ground east of SWMU 1, the Classification Yard located in the northeast portion of SFAAP.

#### AOC 21 - Trench Disposal Area A6

AOC 21 (approximately 0.1 acres) is the Disposal Trench identified as A6 in 1948 aerial photographs from disturbed ground south of SWMU 1, the Classification Yard located in the northeast portion of SFAAP.

#### AOC 22 - Old Reclamation Yard

The Old Reclamation Yard (approximately 13 acres) is located in the northeast portion of the plant. Disturbed ground in a fenced area south of the classification area was observed in 1948 aerial photographs. A site walk was conducted in February 2003. The following was observed: metal debris, stressed vegetation and bare spots.

#### AOC 23 - Cleanup Under Explosives Foundations

This site involves the investigation and cleanup underneath explosive buildings' foundations. This site includes SWMUs 10, 14, 17, 24, 26, 31, 36, 43, 47, 48, 65, 67, and AOCs 11, 12, 16, with an approximate total square feet of 2,254,113 of concrete. The explosive foundations will be removed and any soil containing greater than 10% explosives will be decontaminated. After explosive decontamination is completed, the foundations will require investigation and cleanup of any remaining contaminated soil.

#### AOC 24 - Cleanup Under Explosives Sewers

This site involves the investigation and cleanup underneath explosive sewer lines. This site includes SWMUs 7, 8, 9, 10, 17, 24, 26, 36, 67, and AOC 16, with an approximate total linear feet of 163,141 of explosive sewer lines. The explosive sewer lines will be removed and any soil containing greater than 10% explosives will be decontaminated. After explosive decontamination is completed, the sewers and underlying soil will require investigation and cleanup of any remaining contaminated soil.

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
DRAFT PERMIT**

**PROPOSED MODIFICATIONS TO PART II OF THE PERMIT  
ORIGINALLY ISSUED BY EPA ON SEPTEMBER 29, 1999**

**SUNFLOWER ARMY AMMUNITION PLANT  
DESOTO, KANSAS  
RCRA ID# KS3213820878**

In accordance with 40 CFR 270.41(a)(2), EPA has determined that the changes are necessary to Part II of the Permit issued to Sunflower Army Ammunition Plant, De Soto, Kansas, RCRA ID# KS3213820878 to:

- Transfer the permit to a new owner and operator,
- Designate groundwater operable units (GWOU)s, AOCs and additional SWMUs,
- Require implementation of corrective measures at solid waste management units (SWMUs) and an area of concern (AOC),
- Revise the facility description to delete property,
- Defer corrective action requirements to KDHE oversight if facility is sold to a developer,
- Provide a mechanism for corrective measure completion and deletion of property, and
- Determine corrective measures complete without controls at three SWMUs.

The Director referenced in 40 CFR 270.41 is defined in 40 CFR 270.2 as the EPA Regional Administrator. The Regional Administrator of EPA Region 7 has delegated authority to perform all actions necessary to issue, deny, modify, or revoke and reissue permits for owners and operators of hazardous waste treatment, storage, and disposal facilities pursuant to Section 3005 of RCRA to the Director of the Air, RCRA, and Toxics Division of EPA Region 7 (hereafter referred to as "Director") or the Director's designated representative, by delegation No. R7-8-6; January 1, 1995.

1. Part II of the Permit was issued on September 30, 1991, to the Department of the Army (Army) as the Owner and Hercules Aerospace Company as the Operator. The Army has submitted a permit modification request to transfer the permit to Sunflower Redevelopment, LLC (SRL) as Owner and Operator and to retain the Army in Part II of the Permit as an additional Operator. The Director has cause to modify the permit pursuant to 40 CFR 270.41(b)(2) when he receives notification of a proposed transfer of the facility. The EPA has received a new Part A permit application dated March 8, 2005, identifying SRL as the new owner and operator.



Page 1 of Part II of the Permit consists of the introductory and authority section which identifies the facility owner and operator, pertinent statutory and regulatory requirements, delegations of authority and the issuing and effective dates of the permit. The EPA proposes to modify the permit to designate Sunflower Redevelopment, LLC as the facility owner and operator and to designate the Department of the Army as an additional operator. The EPA also proposes to modify the permit to add clarifying language regarding EPA's authority and the original issuance of the Permit. The following shows the introductory and authority section as it would read following EPA's modification:

*Pursuant to Section 227 of the Hazardous and Solid Waste Amendments of 1984 (hereafter referred to as "HSWA"), the United States Environmental Protection Agency (hereafter referred to as "EPA") is granted authority to issue or deny permits or those portions of permits affected by the requirements established by HSWA. By this authority and pursuant to Sections 3001(g), 3001(h), 3002(b), 3004(d), 3004(u), 3004(v) and 3005 of the Resource Conservation and Recovery Act (RCRA) as amended by HSWA, 42 USC §§6921(g), 6921(h), 6922(b), 6924(d), 6924(u), 6924(v), and 6925, EPA hereby grants to the Sunflower Redevelopment, LLC (SRL) as Owner and Operator and to the Department of the Army (Army) as an additional Operator, hereafter referred to jointly as "the Permittee", permission to perform activities permitted by HSWA as well as certain activities required by HSWA, at the facility located at 35425 W. 103rd St., De Soto, Kansas, in accordance with the conditions of Part II of this permit.*

*Part II of this permit addresses the corrective action requirements for solid waste management units and other HSWA requirements as administered and enforced by EPA. Applicable regulations are found in 40 CFR Parts 260 through 264, 268, 270, and 124, as specified in Part II of this permit.*

*All regulations cited in Part II of this permit refer to regulations in effect on the date of issuance of Part II of this permit. With the exception of regulations in existence at the time of permit issuance and referenced in Part II of this permit, the only other RCRA regulations applicable to this facility during the life of Part II of this permit shall be those regulations which, by their terms, specifically apply to pre-existing RCRA permits. Certain other regulations may be self-implementing regardless of permit status. Regulations may also be incorporated into Part II of this Permit by subsequent permit modification, revocation and reissuance or termination.*

*The Regional Administrator has delegated authority to perform all actions necessary to issue, deny, modify, or revoke and reissue permits for owners and operators of hazardous waste treatment, storage, and disposal facilities pursuant to Section 3005 of RCRA to the Director of the Air, RCRA, and Toxics Division of EPA Region 7 (hereafter referred to as "Director") or the Director's designated representative, by delegation No. R7-8-6; January 1, 1995. The original Part II of this permit was issued by the Director of the Waste Management Division of EPA Region 7 under a previous delegation of authority from the Regional Administrator.*

*Part II of this permit is based on the assumption that the information in the permit application, originally submitted by the Army, is accurate and that the facility will be operated as specified in the application.*

*Any inaccuracies found in the application or other submitted information may be grounds for the termination, revocation and reissuance, or modification of Part II of this permit in accordance with 40 CFR §§270.41, 270.42, and 270.43, or for enforcement action. The Permittee shall inform EPA of any deviation from or changes in the application or other documents and agreements affecting the Permittee's obligation and responsibility to complete corrective action requirements or that would affect the Permittee's ability to comply with Part II of this permit.*

*Part II of this permit was originally issued by David A. Wagoner, Director, Waste Management Division, EPA Region 7 on September 30, 1991 and became effective at 12:01 AM on December 9, 1991 and shall remain in effect because of its continuance in accordance with 40 CFR §270.51. Part II of this permit shall remain in effect even if Part I is appealed, terminated, has expired, or is otherwise not in effect.*

*This permit is not subject to the requirements of the Paperwork Reduction Act.*

*Done at Kansas City, Kansas, this \_\_\_\_\_ day of \_\_\_\_\_, 2005.*

*<<signature>>*

*William A. Spratlin*

*Director*

*Air, RCRA and Toxics Division*

Permit Condition 3.H. is proposed to be modified to specify the Anti-Deficiency Act applies only to the United States Government and not to Sunflower Redevelopment, LLC. The following shows Permit Condition 3.H. as it would read following EPA's modification:

*The Permittee shall comply with all conditions of this Permit, except to the extent and for the duration such noncompliance is authorized by an emergency Permit. Any Permit noncompliance, other than noncompliance authorized by an emergency Permit, constitutes a violation of RCRA and is grounds for enforcement action; for Permit termination, revocation and reissuance, or modification; or for denial of a Permit renewal application. It is the expectation that all obligations of the Army arising under this Permit will be fully funded. The Army shall take all necessary steps and make good faith efforts to obtain timely funding to meet its obligations under this Permit.*

*Any requirement for the payment or obligation of funds by the Army established by the terms of this Permit shall be subject to the availability of appropriated funds, and no provision herein shall be interpreted to require obligation or payment of funds in violation of the Anti-Deficiency Act, 31 U.S.C. § 1341.*

*If funds are not available to fulfill the Permittee's obligations under this Permit, EPA reserves the right to take any appropriate action necessary to protect human health and the environment.*

2. Since Part II of the Permit was issued, additional solid waste management units (SWMUs), areas of concern (AOCs) and groundwater operable units (GWOU) have been identified by the Army. The Army conducted a study titled "Environmental Baseline Survey, Sunflower Army Ammunition Plant, August 1998." In the Environmental Baseline Survey, the Army has identified the areas at the facility which may contain CERCLA hazardous substances and may require further investigation and/or remediation. That report provided EPA the information to designate AOCs and additional SWMUs in Part II of the Permit. Therefore, the Director has cause to modify Part II of the Permit pursuant to 40 CFR 270.41(a)(2) to designate new SWMUs, AOCs and GWOU in Part II of the Permit. Definitions of "area of concern" and of "groundwater operable unit" are proposed to be added to Permit Condition 2 as necessary conforming changes to Part II of the Permit.

Permit Condition 1 is proposed to be modified by adding the following identified SWMUs, AOCs and GWOU immediately after the original list of 49 SWMUs:

*SWMU 50 - Disposal Site East of the Classification Yard*  
*SWMU 51 - Battery Handling Area*  
*SWMU 52 - Paint Bay Building 542*  
*SWMU 53 - Construction Debris Landfill/Waste Pile*  
*SWMU 54 - Fluorescent Tube Well*  
*SWMU 55 - Old Administrative Buildings*  
*SWMU 56 - Well South of Facility 211*  
*SWMU 57 - Chemical Preparation House*  
*SWMU 58 - Combined Shops Area*  
*SWMU 59 - Laundry Facility*  
*SWMU 60 - Old Photographic Laboratory*  
*SWMU 61 - Environmental Laboratory (Facility 232)*  
*SWMU 62 - Transformer Storage Warehouse (Facility 566-5)*  
*SWMU 63 - Water Towers*  
*SWMU 64 - Paper Burning Ground*  
*SWMU 65 - Tank Farm*  
*SWMU 66 - Installation-Wide Stream Study*  
*SWMU 67 - South Acid Area*  
*SWMU 68 - Industrial Wastewater Treatment Plant*

*AOC 1 - Monitoring Well West of Old Admin Area*  
*AOC 2 - Main Electrical Switch Yard*  
*AOC 3 - New Photographic Laboratory*  
*AOC 4 - Disposal Area Southeast of STP*  
*AOC 5 - Cannon Range Tunnels (Facility 303)*  
*AOC 6 - 35 Process Facilities within F-Line Area*  
*AOC 7 - Former Truck Maintenance Shop in South Acid Area*

*AOC 8 – Former Fuel Oil Storage Tank in South Acid Area*  
*AOC 9 – Oil and Paint House in South Acid Area*  
*AOC 10 – Storage Magazines not part of SWMUs 15 and 16*  
*AOC 11 – Forced Air Dryers and Rest, Screen and Can Pack Houses*  
*AOC 12 – Paste Air Dry Facilities*  
*AOC 13 – General Warehouses (8037 Series)*  
*AOC 14 – Robert’s Lake*  
*AOC 15 – Hazardous Analysis Testing Lab*  
*AOC 16 – NC Production Lines*  
*AOC 17 – NQ Production Facilities*  
*AOC 18 – Trench Disposal Area A3*  
*AOC 19 – Trench Disposal Area A4*  
*AOC 20 – Trench Disposal Area A5*  
*AOC 21 – Trench Disposal Area A6*  
*AOC 22 – Old Reclamation Yard*  
*AOC 23 - Cleanup Under Explosives Foundations*  
*AOC 24 – Cleanup Under Explosives Sewers*

*GWOU#1 will consist of SWMUs 26, 27, 44, 45, 47 and AOC 17*

*GWOU#2 will consist of SWMUs - 3 thru 13, 20, 24, 25, 30, 33 thru 35, 37 thru 40, 46, 48, 52, 53, 58 and 62 thru 64 and AOCs - 2, 4, 8, 9, 12, 13, 15 and 16*

*GWOU#3 will consist of SWMUs - 17, 18, 19, 21, 22, 31, 32, 43 and 49 and AOCs - 11 and 14*

The proposed definition of area of concern to be added to Permit Condition 2 is as follows:

*“Area of Concern (AOC)” means any area of the facility where a release to the environment of hazardous waste(s) or hazardous constituents has occurred, is suspected to have occurred, or may occur, regardless of the frequency or duration of the release.*

The proposed definition of groundwater operable unit to be added to Permit Condition 2 is as follows:

*“Groundwater operable unit (GWOU)” means a discrete area consisting of a single to many potential release sites, grouped together for purposes of assessment and cleanup. The primary criteria for placement of release sites into an operable unit include geographic proximity, similarity of waste characteristics and site type, and the possibility for economies of scale.*

Since Part II of the Permit was issued, additional investigations have been completed that have provided additional information on the originally listed SWMUs. The descriptions of these SWMUs in EPA’s January 1991 RCRA Facility Assessment may no longer reflect the current definition of these SWMUs. The EPA has prepared descriptions for the SWMUs, AOCs and GWOUs that are proposed to be added to Part II of the Permit. The

SWMU, AOC and GWOU descriptions attached to these draft permit modifications are proposed to be added to Part II of the Permit as Attachment A (see the attachment to these draft permit modifications for the full text of the proposed Attachment A).

3. Part II of the Permit was issued to Sunflower Army Ammunition Plant by EPA to address the requirements of the Hazardous and Solid Waste Amendments of 1984 to the Resource Conservation and Recovery Act because Kansas was not authorized to permit those RCRA requirements. The information necessary to require implementation of corrective measures at solid waste management units (SWMUs) was not available when Part II of the Permit was originally issued. The EPA has new information to now propose permit conditions to require corrective measures implementation. Therefore, the Director has cause to modify Part II of the Permit pursuant to 40 CFR 270.41(a)(2).

The proposed modifications require corrective measures implementation for SWMU 10 and AOC 6 and re-proposes corrective measures implementation for SWMUs 10, 11, 21, 22 and 32. Concurrent with our Statement of Basis for SWMUs 10, 11, 22 and 32 dated September 29, 1999, the EPA provided public notice of draft permit modifications to require corrective measures implementation. A subsequent public notice was provided for the establishment of staging piles for corrective measures implementation at SWMUs 10 and 11. Those permit modifications were never finalized by the EPA.

The EPA recognizes that the Army has completed the excavation, treatment and off-site disposal of contaminated soil from SWMUs 10, 11, 22, 32, and AOC 6 and consequently is not calling for re-submittal of deliverables already submitted pursuant to the draft permit modifications proposed in 1999. However, the corrective measures implementation report for SWMU 10 must be revised and resubmitted to document the additional soil removed to meet cleanup criteria for unrestricted use. Corrective measures implementation reports must be submitted to document the corrective measures implementation at SWMUs 22 and AOC 6. Corrective measures completion reports must be submitted for SWMUs 10, 11, 22, 32, and AOC 6. All deliverables required by the draft permit modifications are to be submitted for SWMU 21.

The following is EPA's proposed addition of corrective measures implementation requirements as Permit Condition 20 to Part II of the Permit for SWMU 21 and AOC 6 and re-proposal of corrective measures implementation at SWMUs 10, 11, 22 and 32:

20. *Corrective Measures Implementation at SWMUs 10, 11, 21, 22 and 32 and AOC 6*

A. *Corrective Measures Implementation Workplan*

1. *Within 60 days of the Permittee's receipt of notification of EPA's selection of the corrective measure(s), the Permittee shall submit to EPA a Corrective Measures Implementation Workplan ("CMI Workplan"). The CMI Workplan is subject to approval by EPA and shall be developed in a manner consistent with the CMI Scope of Work in the "RCRA*

*Corrective Action Plan” EPA 520-R-94-004, OSWER Directive 9902.3-2A, May 1994, incorporated herein.*

2. *The CMI Workplan shall be designed to facilitate the design, construction, operation, maintenance, and monitoring of corrective measures at the facility. In accordance with the RCRA Corrective Action Plan, the CMI Workplan shall also include the following sections:*

*Program Management  
Public Involvement  
Design Plans and Specifications  
Operation and Maintenance  
Long Term Monitoring  
Cost Estimate  
Project Schedule  
Construction Quality Assurance  
Quality Assurance Project  
Data Management  
Periodic Reports*

3. *Concurrent with the submission of a CMI Workplan, Respondent shall submit to EPA a CMI Health and Safety Plan.*

4. *The Director will review the CMI Workplan for approval in accordance with the procedures set forth in Section 14 herein. Upon approval thereof by EPA, the Permittee shall implement the plan in accordance with the schedule contained therein. The Permittee shall also submit an electronic copy of the workplan in PDF format on a CD-ROM that incorporates all changes and/or revisions required for approval.*

**B. *Corrective Measures Implementation Report***

1. *The Permittee shall submit a Corrective Measures Implementation Report (CMI Report) to EPA in accordance with the EPA approved CMI workplan schedule meeting the requirements of the RCRA Corrective Action Plan.*

2. *The Director will review the CMI Report for approval in accordance with the procedures set forth in Section 14 herein. The Permittee shall also submit an electronic copy of the report in PDF format on a CD-ROM that incorporates all changes and/or revisions required for approval.*

**C. *Corrective Measures Completion Report***

1. *The Permittee shall submit a Corrective Measures Completion Report to EPA within ninety (90) days of the completion of all remedial activities meeting the requirements of the RCRA Corrective Action Plan.*

2. *The Director will review the Corrective Measures Completion Report for approval in accordance with the procedures set forth in Section 14 herein. The Permittee shall also submit an electronic copy of the report in PDF format on a CD-ROM that incorporates all changes and/or revisions required for approval.*

*D. Staging Piles*

1. *The Permittee is granted authorization pursuant to 40 CFR 264.554 to operate staging piles for treated soils from SWMUs 10 and 11. These staging piles shall only be used for treated soil removed from SWMUs 10 and 11. The staging piles may be located within the soil staging and treatment area or in the stockpile area designated by the Army for placement of treated soil until it is transferred to the disposal site. Staging piles shall only be placed upon the concreted areas of the soil staging and treatment area or on a double layer of 10 mil reinforced polyethylene liner in the designated stockpile area. At the end of each workday, any uncovered staging piles will be covered with "Con Cover 180" or an alternative cover material approved by EPA. Any precipitation run-off from the staging piles shall be collected and re-used in the soil treatment process or treated elsewhere at an authorized wastewater treatment facility.*

2. *Operation of the staging piles shall be in accordance with the "Draft Lead Stabilization Work Plan," dated February 2000 (as modified by the Letter Addendum dated April 4, 2000), the "Draft Final Waste Management and Disposal Plan," dated February 2000 and the "Final Storm Water Pollution Prevention Plan," dated February 2000 hereby incorporated by reference.*

3. *The treated waste piles, fencing, and signs will be inspected at least monthly and after each major weather event, e.g., high speed winds, intense rainfall, etc. and all inspections will be documented. Any observed damage to the cover and/or drainage system, fences, and signs will be repaired within 72 hours; any treated soil that escapes into the environment within any "open" 72 hour period will be the responsibility of the Permittee and cleaned up promptly.*

4. *The overall integrity of the waste pile temporary storage system will be maintained to prevent the escape of the treated soils into the surrounding environment. An operation, maintenance and inspection plan shall be submitted to EPA for approval by July 19, 2000 and include all such activities required both during the soil treatment phase and the post-treatment phase soil stockpiling.*

5. *All staging piles shall be closed in accordance with 40 CFR 264.554(j) and 264.554(k). A plan for closure of the staging piles shall be submitted to EPA for approval by July 19, 2000. Closure shall be completed in accordance with the approved plan no later than October 19, 2002.*

6. *Authorization for use for staging piles created under this Permit Condition 13.D. shall expire on April 19, 2002. All materials within the staging piles will be transferred to*

*an approved disposal site by April 19, 2002. If any of the treated/nonhazardous soil is removed from the waste piles for onsite fill at SWMU 18 or at any other location on the Sunflower Army Ammunition Plant, the soil must be deposited in a professional engineer designed, lined cell that meets RCRA Subtitle D municipal solid waste standards.*

4. Part II of the Permit was issued by EPA on September 30, 1991, under the authority of the Hazardous and Solid Waste Amendments to the Resource Conservation and Recovery Act to address corrective action for release of hazardous waste or hazardous constituents from SWMUs. Part II of the Permit includes a definition of facility for purposes of those corrective action requirements. That definition is based upon the definition of *facility* found at 40 CFR 261.10 and incorporated within Part II of the Permit.

The Army has requested in its January 21, 2004, letter that EPA remove uncontaminated areas of SFAAP from the definition of facility in Part II of the Permit. See attached Figure 6 for the areas of SFAAP for which no further cleanup is necessary and which can be transferred without restrictions on future use because of the absence of contaminated soil. EPA and the Kansas Department of Health and Environment's Bureau of Environmental Remediation have reviewed the Army's request. EPA and KDHE have inspected those areas of the facility proposed for transfer without future use restrictions. Both EPA and KDHE believe that it is unlikely that those areas have soil contamination which would require either corrective action or future use restrictions with regards to potential contact with soil.

This determination does not extend to ground water beneath the areas in both of the Army's requests. Some of these areas are within the boundaries of the GWOUs being established at SFAAP and may have contaminated ground water beneath them. Areas may also be adjacent to SWMUs or AOCs that have ground water contamination which extends beyond the SWMU or AOC boundary. EPA is continuing to evaluate if additional corrective measures are needed for contaminated ground water. Future uses that may result in contact with ground water will continue be restricted for all of SFAAP as the facility was defined in Part II of the Permit issued on September 30, 1991. Removal of future use restrictions to prevent exposure to contaminated ground water, or corrective measures for ground water, will be addressed in a future statement of basis.

EPA proposes to change Section 2 of Part II of the Permit to remove the identified areas from the definition of facility. The EPA will continue to have authority pursuant to Part II of the Permit under the authority of Section 3004(v) of RCRA to issue corrective action requirements to address the contaminated ground water not then under facility boundaries. Future uses will be restricted to prevent contact with ground water until such time as ground water contamination has been fully investigated and the need for corrective action for contaminated ground water in these areas is determined as part of the ongoing investigations of GWOUs, SWMUs and AOCs.



The EPA has determined that this is a permit modification request by the Permittee pursuant to 40 CFR 270.42. The proposed definition of facility in Permit Condition 2 is as follows:

*“Facility” means all contiguous property under the control of the owner or operator. For the purposes of this permit, the areas shown on the attached Figure 1 as “Land Requiring No Further Cleanup – Ready for Transfer” are not included in this definition of facility.*

5. EPA is proposing changes to Part II of the Permit to defer implementation of corrective action required by the permit to work to be performed under the KDHE Consent Order. EPA believes that corrective actions pursuant to the KDHE Consent Order will be protective of human health and the environment and will provide for appropriate public participation in the remedy selection process. The KDHE Consent Order is being issued under Kansas legal authorities and the work will be performed with KDHE as the lead oversight agency. Since the KDHE Consent Order was not executed at the time the original permit was issued, the Director has cause to modify Part II of the Permit pursuant to 40 CFR 270.41(a)(2) to defer to KDHE the primary responsibility for the direction, review, oversight and approval for corrective action pursuant to the KDHE Consent Order after a transfer of the facility to the developer. The EPA proposes to add the following as the first paragraph beginning on page 2 of Part II of the Permit as it was originally issued:

*Part II of this Permit addresses the corrective action requirements for SWMUs, AOCs and GWOUs and establishes the schedule of compliance for those activities and implements other provisions of the Hazardous and Solid Waste Amendments to the Resource Conservation and Recovery Act for which the KDHE is not authorized. On <insert date of final KDHE Consent Order>, the Sunflower Redevelopment, LLC, (SRL) and the Kansas Department of Health and Environment entered into a Consent Order (KDHE Consent Order) for investigation of releases at the facility, including those from SWMUs, AOCs and GWOUs. The KDHE Consent Order has been entered into by KDHE and SRL according to the terms and conditions stated therein. Performance of work under Part II of this Permit is deferred to the work to be performed under the KDHE Consent Order, subject to the Director’s review as described hereinafter. The Director will determine if the schedule of compliance herein for the completion of activities to comply with Section 3004(u) and (v) has been satisfied by the work being performed by the Permittee pursuant to the KDHE Consent Order.*

*The Director’s decision to impose and require implementation of the corrective action for releases from SWMUs, AOCs and GWOUs in Part II of this Permit will be based upon review of the work performed pursuant to the KDHE Consent Order. If the Director determines that the work performed is substantially consistent with the requirements for a RCRA Facility Investigation, Corrective Measures Study, Interim Measures, Newly Identified SWMU Assessment, and Newly Identified Release Investigation and is adequate to protect human health and the environment, those activities will be deemed completed pursuant to Part II of the Permit. The EPA will review annually (or more often if EPA determines that more frequent review is necessary or appropriate) the progress of the work being performed by the Permittee to insure*

*that the corrective action is being timely performed and, on completion, will be adequate to protect human health and the environment. The Director may at any time require that the Permittee perform corrective action pursuant to Part II of this Permit if he determines that either (i) timely progress is not being made to control exposures to releases of hazardous wastes and hazardous constituents or (ii) the work performed, or to be performed, will not be adequate to protect human health and the environment.*

*The Permittee shall provide one copy of all reports, notifications, [work] plans, specifications, correspondence, etc., produced as a result of the KDHE Consent Order with the KDHE to the EPA Project Manager specified in Permit Condition 3.A. The Permittee shall provide additional copies of the above items upon request as specified by the Project Manager.*

*The Permittee shall continue to provide the required notification for newly identified solid waste management units in accordance with Permit Condition 5 and the notification for newly identified releases in accordance with Permit Condition 6.*

Permit Condition 3.A. is revised to designate the current project manager and EPA Region 7's new address. The permit condition is revised as follows:

*U.S. EPA, Region 7  
Attn: Kenneth Herstowski, ARTD/RCAP  
901 N. 5<sup>th</sup> St.  
Kansas City, Kansas 66101*

6. The EPA recognizes the importance of an official acknowledgement that corrective action activities have been completed. (see "Final Guidance on Completion of Corrective Action Activities at RCRA Facilities," 68 FR 8757, February 25, 2003) An official completion determination made through appropriate procedures benefits the owner or operator of a facility, the regulatory agency implementing the corrective action program, and the public, by providing a definitive statement as to work completion. Because different approaches to achieving protection of human health and the environment may be taken due to site-specific circumstances, EPA anticipates two types of completion determinations (1) Corrective Action Complete without Controls, or (2) Corrective Action Complete with Controls.

Subsequent to the issuance of the original permit, the Army has declared the SFAAP property as excess to its needs. The Army, with the U.S. General Services Administration, is negotiating the sale of the property to a private developer for redevelopment. Since the decision to sell the property for redevelopment was made after the issuance of the original permit, the Director has cause to modify Part II of the Permit pursuant to 40 CFR 270.41(a)(2) to provide a process to make formal determinations that corrective measures are complete with or without controls.

The EPA does not want to create a significant, additional administrative burden when considering whether a corrective measure is complete, with or without controls, at

SFAAP when the KDHE has already taken appropriate action. The KDHE Consent Order provides for public participation in selection of a remedy that is commensurate to that which EPA would provide pursuant to Part II of the Permit. The EPA proposes that a Class 1 permit modification, requiring prior approval of the Director (see 40 CFR 270.42), be used as the process to modify the definition of facility in Part II of the Permit when the KDHE Consent Order remedy has been completely implemented at that portion of the facility because a corrective measures completion determination with or without controls has been made.

The following is EPA's proposed addition of administrative procedures to make a determination of corrective measures completion with or without controls as Permit Condition 21 to Part II of the Permit:

*21. Procedures to Request a Determination for Corrective Measures Completion*

*The Permittee may request the Director to make a determination that corrective measures are complete for any portion of the facility.*

- A. To request a determination that corrective measures are complete without controls, the Permittee shall demonstrate that no hazardous waste or constituents are present in or on the area or, if present, no controls are necessary to protect and to maintain protection of human health and the environment for any future use of the area.*
- B. To request a determination that corrective measures are complete with controls, the Permittee shall demonstrate that (1) a full set of corrective measures has been defined; (2) the facility has completed construction and installation of all required corrective measures; (3) site specific media cleanup objectives have been met; and (4) all that remains is performance of required operation and maintenance and monitoring actions, and/or compliance with and maintenance of any institutional controls for the area. The Permittee shall provide documentation that an enforceable mechanism is in place so that there is compliance with and maintenance of the controls and financial assurance to continue and complete the controls.*

*The Permittee may request a Class 1 permit modification requiring prior approval of the Director using the procedures in 40 CFR 270.42 to remove areas at SFAAP from the definition of facility in Permit Condition 2 where a corrective measures completion determination either with or without controls has been made by the Director.*

The proposed definition of corrective measure complete without controls to be added to Permit Condition 2 is as follows:

*“Corrective Measure Complete without Controls” means that no additional remedial activity would be required on the part of the regulatory agency or the owner or operator to maintain*

*protection of human health and the environment. No controls are necessary at the facility to maintain protection of human health and the environment.*

The proposed definition of corrective measure complete with controls to be added to Permit Condition 2 is as follows:

*“Corrective Measure Complete with Controls” means that EPA can make the determination that: (1) A full set of corrective measures has been defined; (2) the facility has completed construction and installation of all required remedial actions; (3) site specific media cleanup objectives have been met; and (4) all that remains is performance of required operation and maintenance and monitoring actions, and/or compliance with and maintenance of any institutional controls.*

7. Subsequent to the issuance of the original permit, the KDHE has approved closure of three hazardous waste management units in accordance with 40 CFR Part II65, subpart G. These hazardous waste units are also designated as SWMUs: SWMU 23 – New Explosive Waste Burning Ground, SWMU 28 – Waste Calcium Carbide Treatment Area and SWMU 29 – Industrial Wastewater Treatment Lagoons. Because the KDHE’s approvals of closure were made after the issuance of the original permit, the Director has cause to modify Part II of the Permit pursuant to 40 CFR 270.41(a)(2) to determine that corrective measures are complete without controls at those SWMUs.

The following is EPA’s proposed addition to identify when a determination of corrective measures completion with or without controls has been made as Permit Condition 22 to Part II of the Permit:

22. *Identification of Solid Waste Management Units, Areas of Concern and Groundwater Operable Units that Have Completed Corrective Measures With or Without Controls*
  - A. *If the Director has made a determination that corrective measures are complete without controls, the Permittee may add SWMUs, AOCs and GWOUs to the following using the procedures for a Class 1 permit modification using the procedures in 40 CFR 270.42. The following SWMUs, AOCs and GWOUs have completed corrective measures without controls:*

*SWMU 23 – New Explosive Waste Burning Ground*  
*SWMU 28 – Waste Calcium Carbide Treatment Area*  
*SWMU 29 – Industrial Wastewater Treatment Lagoons*
  - B. *If the Director has made a determination that corrective measures are complete with controls, the Permittee may add SWMUs, AOCs and GWOUs to the following using the procedures for a Class 1 permit modification using the procedures in 40 CFR 270.42. The following SWMUs, AOCs and GWOUs have completed corrective measures with controls:*

\*\*\**reserved*\*\*\*

Attachments

- Proposed Permit Attachment A
- Figure 1 - Facility Definition

\*\*\*end of proposed modifications\*\*\*